



SEQUENCE LISTING

<110> Loughney, Kate  
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<150> 09/256,000  
<151> 1999-02-23  
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Lys Val Arg Pro Val Ala Ile Lys Gln Leu Ser Glu Arg Glu Glu Leu		
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atc cag agc gtg ctg gcg cag gtt gca gag cag ttc tca aga gca ttc		148
Ile Gln Ser Val Leu Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe		
30 35 40		
aaa atc aat gaa ctg aaa gct gaa gtt gca aat cac ttg gct gtc cta		196
Lys Ile Asn Glu Leu Lys Ala Glu Val Ala Asn His Leu Ala Val Leu		
45 50 55		
gag aaa cgc gtg gaa ttg gaa gga cta aaa gtg gtg gag att gag aaa		244
Glu Lys Arg Val Glu Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys		
60 65 70		
tgc aag agt gac att aag aag atg agg gag gag ctg gcg gcc aga agc		292
Cys Lys Ser Asp Ile Lys Lys Met Arg Glu Glu Ala Ala Arg Ser		
75 80 85		
agc agg acc aac tgc ccc tgt aag tac agt ttt ttg gat aac cac aag		340
Ser Arg Thr Asn Cys Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys		
90 95 100 105		
aag ttg act cct cga cgc gat gtt ccc act tac ccc aag tac ctg ctc		388
Lys Leu Thr Pro Arg Arg Asp Val Pro Thr Tyr Pro Lys Tyr Leu Leu		
110 115 120		
tct cca gag acc atc gag gcc ctg cg aag ccg acc ttt gac gtc tgg		436
Ser Pro Glu Thr Ile Glu Ala Leu Arg Lys Pro Thr Phe Asp Val Trp		

125	130	135	
ctt tgg gag ccc aat gag atg ctg agc tgc ctg gag cac atg tac cac Leu Trp Glu Pro Asn Glu Met Leu Ser Cys Leu Glu His Met Tyr His 140	145	150	484
gac ctc ggg ctg gtc agg gac ttc agc atc aac cct gtc acc ctc agg Asp Leu Gly Leu Val Arg Asp Phe Ser Ile Asn Pro Val Thr Leu Arg 155	160	165	532
agg tgg ctg ttc tgc gtc cac gac aac tac aga aac aac ccc ttc cac Arg Trp Leu Phe Cys Val His Asp Asn Tyr Arg Asn Asn Pro Phe His 170	175	180	580
aac ttc cgg cac tgc ttc tgc gtg gcc cag atg atg tac agc atg gtc Asn Phe Arg His Cys Phe Cys Val Ala Gln Met Met Tyr Ser Met Val 190	195	200	628
tgg ctc tgc agt ctc cag gag aag ttc tca caa acg gat atc ctg atc Trp Leu Cys Ser Leu Gln Glu Lys Phe Ser Gln Thr Asp Ile Leu Ile 205	210	215	676
cta atg aca gcg gcc atc tgc cac gat ctg gac cat ccc ggc tac aac Leu Met Thr Ala Ala Ile Cys His Asp Leu Asp His Pro Gly Tyr Asn 220	225	230	724
aac acg tac cag atc aat gcc cgcc aca gag ctg gcg gtc cgcc tac aat Asn Thr Tyr Gln Ile Asn Ala Arg Thr Glu Leu Ala Val Arg Tyr Asn 235	240	245	772
gac atc tca ccg ctg gag aac cac cac tgc gcc gtg gcc ttc cag atc Asp Ile Ser Pro Leu Glu Asn His His Cys Ala Val Ala Phe Gln Ile 250	255	260	820
ctc gcc gag cct gag tgc aac atc ttc tcc aac atc cca cct gat ggg Leu Ala Glu Pro Glu Cys Asn Ile Phe Ser Asn Ile Pro Pro Asp Gly 270	275	280	868
ttc aag cag atc cga cag gga atg atc aca tta atc ttg gcc act gac Phe Lys Gln Ile Arg Gln Gly Met Ile Thr Leu Ile Leu Ala Thr Asp 285	290	295	916
atg gca aga cat gca gaa att atg gat tct ttc aaa gag aaa atg gag Met Ala Arg His Ala Glu Ile Met Asp Ser Phe Lys Glu Lys Met Glu 300	305	310	964
aat ttt gac tac agc aac gag gag cac atg acc ctg ctg aag atg att Asn Phe Asp Tyr Ser Asn Glu Glu His Met Thr Leu Leu Lys Met Ile 315	320	325	1012
ttg ata aaa tgc tgt gat atc tct aac gag gtc cgt cca atg gaa gtc Leu Ile Lys Cys Cys Asp Ile Ser Asn Glu Val Arg Pro Met Glu Val 330	335	340	1060
gca gag cct tgg gtg gac tgt tta tta gag gaa tat ttt atg cag agc Ala Glu Pro Trp Val Asp Cys Leu Leu Glu Glu Tyr Phe Met Gln Ser 350	355	360	1108
gac cgt gag aag tca gaa ggc ctt cct gtg gca ccg ttc atg gac cga Asp Arg Glu Lys Ser Glu Gly Leu Pro Val Ala Pro Phe Met Asp Arg 365	370	375	1156
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395	400	405	
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Glu Ile Met Leu Gln Pro Leu Trp Glu Ser Arg Asp Arg Tyr Glu Glu			
410	415	420	425
ctg aag cgg ata gat gac gcc atg aaa gag tta cag aag aag act gac	1348		
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agc ttg acg tct ggg gcc acc gag aag tcc aga ggg aga agc aga gat	1396		
Ser Leu Thr Ser Gly Ala Thr Glu Lys Ser Arg Gly Arg Ser Arg Asp			
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gtg aaa aac agt gaa gga gac tgt gcc tgaggaaagc ggggggcgtg	1443		
Val Lys Asn Ser Glu Gly Asp Cys Ala			
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Val Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu Leu Lys Ala		
35	40	45

Glu Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val Glu Leu Glu		
50	55	60

Gly Leu Lys Val Val Glu Ile Glu Lys Cys Lys Ser Asp Ile Lys Lys			
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Met Arg Glu Glu Leu Ala Ala Arg Ser Ser Arg Thr Asn Cys Pro Cys		
85	90	95

Lys Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro Arg Arg Asp		
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115	120	125

Leu Arg Lys Pro Thr Phe Asp Val Trp Leu Trp Glu Pro Asn Glu Met		
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Leu Ser Cys Leu Glu His Met Tyr His Asp Leu Gly Leu Val Arg Asp			
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Phe Ser Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe Cys Val His  
165 170 175

Asp Asn Tyr Arg Asn Asn Pro Phe His Asn Phe Arg His Cys Phe Cys  
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Val Ala Gln Met Met Tyr Ser Met Val Trp Leu Cys Ser Leu Gln Glu  
195 200 205

Lys Phe Ser Gln Thr Asp Ile Leu Ile Leu Met Thr Ala Ala Ile Cys  
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His Asp Leu Asp His Pro Gly Tyr Asn Asn Thr Tyr Gln Ile Asn Ala  
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Arg Thr Glu Leu Ala Val Arg Tyr Asn Asp Ile Ser Pro Leu Glu Asn  
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His His Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro Glu Cys Asn  
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Ile Phe Ser Asn Ile Pro Pro Asp Gly Phe Lys Gln Ile Arg Gln Gly  
275 280 285

Met Ile Thr Leu Ile Leu Ala Thr Asp Met Ala Arg His Ala Glu Ile  
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Glu His Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys Cys Asp Ile  
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Ser Asn Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp Val Asp Cys  
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Ala Gln Ile Gly Phe Ile Lys Phe Val Leu Ile Pro Met Phe Glu Thr  
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Val Thr Lys Leu Phe Pro Met Val Glu Glu Ile Met Leu Gln Pro Leu  
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Trp Glu Ser Arg Asp Arg Tyr Glu Glu Leu Lys Arg Ile Asp Asp Ala  
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ttccccgtggc cccgttcattg gaccgagaca aagtgcacaa ggccacagcc caggattggg 180
tttcatcaag tttgtcctga tcccaatgtt taaaacagtg accaagctct tccccatggg 240

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ttactggaag aatattttat gcagagtgac cgtgagaagt ccgaagcctt cctgtggccc 180
cattcatgga ccgagacaaa gtgaccaaag caacagccca aattgggttc atcaagttt 240
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gaagccaaga agctgaaatt attagtcttc ttggaacaag gtgtctataa atctggttt 240
caaggtcatg actcttacta ggaaagtccg ggcagggcct ccctcctgat gggcctcct 300
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Cys His Cys Leu Leu His
1 5

tcc ctg cag agc gac cgt gag aag tca gaa ggc ctt ccc gtg gcc ccg 164
Ser Leu Gln Ser Asp Arg Glu Lys Ser Glu Gly Leu Pro Val Ala Pro
10 15 20

ttc atg gac cga gac aaa gtg acc aag gcc aca gcc cag att ggg ttc 212
Phe Met Asp Arg Asp Lys Val Thr Lys Ala Thr Ala Gln Ile Gly Phe
25 30 35

atc aag ttt gtc ctg atc cca atg ttt gaa aca gtg acc aag ctc ttc 260
Ile Lys Phe Val Leu Ile Pro Met Phe Glu Thr Val Thr Lys Leu Phe
40 45 50

ccc atg gtt gag gag atc atg ctg cag cca ctt tgg gaa tcc cga gat 308
Pro Met Val Glu Glu Ile Met Leu Gln Pro Leu Trp Glu Ser Arg Asp
55 60 65 70

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cgc tac gag gag ctg aag cgg ata gat gac gcc atg aaa gag tta cag 356  
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75 80 85

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Lys Lys Thr Asp Ser Leu Thr Ser Gly Ala Thr Glu Lys Ser Arg Glu  
90 95 100

aga agc aga gat gtg aaa aac agt gaa gga gac tgt gcc tgaggaaagc 453  
Arg Ser Arg Asp Val Lys Asn Ser Glu Gly Asp Cys Ala  
105 110 115

ggggggcggtg gctgcagttc tggacggctt ggccgagctg cgccggatcc ttgtgcaggg 513

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35 40 45

Thr Val Thr Lys Leu Phe Pro Met Val Glu Glu Ile Met Leu Gln Pro  
50 55 60

Leu Trp Glu Ser Arg Asp Arg Tyr Glu Glu Leu Lys Arg Ile Asp Asp  
65 70 75 80

Ala Met Lys Glu Leu Gln Lys Lys Thr Asp Ser Leu Thr Ser Gly Ala  
85 90 95

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 Ala Leu Glu  
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cac atg tac cac gac ctc ggg ctg gtc agg gac ttc agc atc aac cct 163  
 His Met Tyr His Asp Leu Gly Leu Val Arg Asp Phe Ser Ile Asn Pro  
 5 10 15

gtc acc ctc agg agg tgg ctg ttc tgc gtc cac gac aac tac aga aac 211  
 Val Thr Leu Arg Arg Trp Leu Phe Cys Val His Asp Asn Tyr Arg Asn  
 20 25 30 35

aac ccc ttc cac aac ttc cgg cac tgc ttc tgc gtg gcc cag atg atg 259  
 Asn Pro Phe His Asn Phe Arg His Cys Phe Cys Val Ala Gln Met Met  
 40 45 50

tac agc atg gtc tgg ctc tgc agt ctc cag gag aag ttc tca caa acg 307  
 Tyr Ser Met Val Trp Leu Cys Ser Leu Gln Glu Lys Phe Ser Gln Thr  
 55 60 65

gat atc ctg atc cta atg aca gcg gcc atc tgc cac gat ctg gac cat 355  
 Asp Ile Leu Ile Leu Met Thr Ala Ala Ile Cys His Asp Leu Asp His  
 70 75 80

ccc ggc tac aac aac acg tac cag atc aat gcc cgc aca gag ctg gcg 403  
 Pro Gly Tyr Asn Asn Thr Tyr Gln Ile Asn Ala Arg Thr Glu Leu Ala  
 85 90 95

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 100 105 110 115

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 Ala Phe Gln Ile Leu Ala Glu Pro Glu Cys Asn Ile Phe Ser Asn Ile  
 120 125 130

cca cct gat ggg ttc aag cag atc cga cag gga atg atc aca tta atc 547  
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 135 140 145

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gag aaa atg gag aat ttt gac tac agc aac gag gag cac atg acc ctg	643
Glu Lys Met Glu Asn Phe Asp Tyr Ser Asn Glu Glu His Met Thr Leu	
165 170 175	
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Leu Lys Met Ile Leu Ile Lys Cys Cys Asp Ile Ser Asn Glu Val Arg	
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Pro Met Glu Val Ala Glu Pro Trp Val Asp Cys Leu Leu Glu Glu Tyr	
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Phe Met Gln Ser Asp Arg Glu Lys Ser Glu Gly Leu Pro Val Ala Pro	
215 220 225	
ttc atg gac cga gac aaa gtg acc aag gcc aca gcc cag att ggg ttc	835
Phe Met Asp Arg Asp Lys Val Thr Lys Ala Thr Ala Gln Ile Gly Phe	
230 235 240	
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Ile Lys Phe Val Leu Ile Pro Met Phe Glu Thr Val Thr Lys Leu Phe	
245 250 255	
ccc atg gtt gag gag atc atg ctg cag cca ctt tgg gaa tcc cga gat	931
Pro Met Val Glu Glu Ile Met Leu Gln Pro Leu Trp Glu Ser Arg Asp	
260 265 270 275	
cgc tac gag gag ctg aag cgg ata gat gac gcc atg aaa gag tta cag	979
Arg Tyr Glu Glu Leu Lys Arg Ile Asp Asp Ala Met Lys Glu Leu Gln	
280 285 290	
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Lys Lys Thr Asp Ser Leu Thr Ser Gly Ala Thr Glu Lys Ser Arg Glu	
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Arg Ser Arg Asp Val Lys Asn Ser Glu Gly Asp Cys Ala	
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25

30

Tyr	Arg	Asn	Asn	Pro	Phe	His	Asn	Phe	Arg	His	Cys	Phe	Cys	Val	Ala
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Ser	Gln	Thr	Asp	Ile	Leu	Ile	Leu	Met	Thr	Ala	Ala	Ile	Cys	His	Asp
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							85							95	
Glu	Leu	Ala	Val	Arg	Tyr	Asn	Asp	Ile	Ser	Pro	Leu	Glu	Asn	His	His
							100							110	
Cys	Ala	Val	Ala	Phe	Gln	Ile	Leu	Ala	Glu	Pro	Glu	Cys	Asn	Ile	Phe
							115							125	
Ser	Asn	Ile	Pro	Pro	Asp	Gly	Phe	Lys	Gln	Ile	Arg	Gln	Gly	Met	Ile
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Thr	Leu	Ile	Leu	Ala	Thr	Asp	Met	Ala	Arg	His	Ala	Glu	Ile	Met	Asp
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Ser	Phe	Lys	Glu	Lys	Met	Glu	Asn	Phe	Asp	Tyr	Ser	Asn	Glu	Glu	His
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Met	Thr	Leu	Leu	Lys	Met	Ile	Leu	Ile	Lys	Cys	Cys	Asp	Ile	Ser	Asn
							180							190	
Glu	Val	Arg	Pro	Met	Glu	Val	Ala	Glu	Pro	Trp	Val	Asp	Cys	Leu	Leu
							195							205	
Glu	Glu	Tyr	Phe	Met	Gln	Ser	Asp	Arg	Glu	Lys	Ser	Glu	Gly	Leu	Pro
							210							220	
Val	Ala	Pro	Phe	Met	Asp	Arg	Asp	Lys	Val	Thr	Lys	Ala	Thr	Ala	Gln
							225							240	
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							245							255	
Lys	Leu	Phe	Pro	Met	Val	Glu	Glu	Ile	Met	Leu	Gln	Pro	Leu	Trp	Glu
							260							270	
Ser	Arg	Asp	Arg	Tyr	Glu	Glu	Leu	Lys	Arg	Ile	Asp	Asp	Ala	Met	Lys
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Glu	Leu	Gln	Lys	Lys	Thr	Asp	Ser	Leu	Thr	Ser	Gly	Ala	Thr	Glu	Lys
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Met Gly Ser Gly Ser Ser Tyr Arg Pro Lys Ala  
1 5 10  
atc tac ctg gac atc gat gga cgc att cag aag gta atc ttc agc aag 157  
Ile Tyr Leu Asp Ile Asp Gly Arg Ile Gln Lys Val Ile Phe Ser Lys  
15 20 25  
tac tgc aac tcc agc gac atc atg gac ctg ttc tgc atc gcc acc ggc 205  
Tyr Cys Asn Ser Ser Asp Ile Met Asp Leu Phe Cys Ile Ala Thr Gly  
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ctg cct cgg aac acg acc atc tcc ctg ctg acc acc gac gac gcc atg 253  
Leu Pro Arg Asn Thr Thr Ile Ser Leu Leu Thr Thr Asp Asp Ala Met  
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Val Ser Ile Asp Pro Thr Met Pro Ala Asn Ser Glu Arg Thr Pro Tyr  
65 70 75  
aaa gtg aga cct gtg gcc atc aag caa ctc tcc gag aga gaa gaa tta 349  
Lys Val Arg Pro Val Ala Ile Lys Gln Leu Ser Glu Arg Glu Glu Leu  
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Ile Gln Ser Val Leu Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe  
95 100 105  
aaa atc aat gaa ctg aaa gct gaa gtt gca aat cac ttg gtc cta 445  
Lys Ile Asn Glu Leu Lys Ala Glu Val Ala Asn His Leu Ala Val Leu  
110 115 120  
gag aaa cgc gtg gaa ttg gaa gga cta aaa gtg gtg gag att gag aaa 493  
Glu Lys Arg Val Glu Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys  
125 130 135 140  
tgc aag agt gac att aag aag atg agg gag gag ctg gcg gcc aga agc 541  
Cys Lys Ser Asp Ile Lys Lys Met Arg Glu Glu Leu Ala Ala Arg Ser  
145 150 155  
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Ser Arg Thr Asn Cys Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys  
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Lys Leu Thr Pro Arg Arg Asp Val Pro Thr Tyr Pro Lys Tyr Leu Leu  
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Ser Pro Glu Thr Ile Glu Ala Leu Arg Lys Pro Thr Phe Asp Val Trp  
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ctt tgg gag ccc aat gag atg ctg agc tgc ctg gag cac atg tac cac 733  
Leu Trp Glu Pro Asn Glu Met Leu Ser Cys Leu Glu His Met Tyr His  
205 210 215 220  
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Asp Leu Gly Leu Val Arg Asp Phe Ser Ile Asn Pro Val Thr Leu Arg			
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Arg Trp Leu Phe Cys Val His Asp Asn Tyr Arg Asn Asn Pro Phe His			
240	245	250	
aac ttc cgg cac tgc ttc tgc gtg gcc cag atg atg tac agc atg gtc		877	
Asn Phe Arg His Cys Phe Cys Val Ala Gln Met Met Tyr Ser Met Val			
255	260	265	
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Trp Leu Cys Ser Leu Gln Glu Lys Phe Ser Gln Thr Asp Ile Leu Ile			
270	275	280	
cta atg aca gca gcc atc tgc cac gat ctg gac cat ccc ggc tac aac		973	
Leu Met Thr Ala Ala Ile Cys His Asp Leu Asp His Pro Gly Tyr Asn			
285	290	295	300
aac acg tac cag atc aat gcc cgc aca gag ctg gcg gtc cgc tac aat		1021	
Asn Thr Tyr Gln Ile Asn Ala Arg Thr Glu Leu Ala Val Arg Tyr Asn			
305	310	315	
gac atc tca ccg ctg gag aac cac cac tgc gcc gtg gcc ttc cag atc		1069	
Asp Ile Ser Pro Leu Glu Asn His His Cys Ala Val Ala Phe Gln Ile			
320	325	330	
ctc gcc gag cct gag tgc aac atc ttc tcc aac atc cca cct gat ggg		1117	
Leu Ala Glu Pro Glu Cys Asn Ile Phe Ser Asn Ile Pro Pro Asp Gly			
335	340	345	
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Phe Lys Gln Ile Arg Gln Gly Met Ile Thr Leu Ile Leu Ala Thr Asp			
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Met Ala Arg His Ala Glu Ile Met Asp Ser Phe Lys Glu Lys Met Glu			
365	370	375	380
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Asn Phe Asp Tyr Ser Asn Glu Glu His Met Thr Leu Leu Lys Met Ile			
385	390	395	
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Leu Ile Lys Cys Cys Asp Ile Ser Asn Glu Val Arg Pro Met Glu Val			
400	405	410	
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Ala Glu Pro Trp Val Asp Cys Leu Leu Glu Glu Tyr Phe Met Gln Ser			
415	420	425	
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Asp Arg Glu Lys Ser Glu Gly Leu Pro Val Ala Pro Phe Met Asp Arg			
430	435	440	
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Leu Ile Pro Met Phe Glu Thr Val Thr Lys Leu Phe Pro Met Val Glu			
465	470	475	

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Glu Ile Met Leu Gln Pro Leu Trp Glu Ser Arg Asp Arg Tyr Glu Glu			
480	485	490	
ctg aag cgg ata gat gac gcc atg aaa gag tta cag aag aag act gac	1597		
Leu Lys Arg Ile Asp Asp Ala Met Lys Glu Leu Gln Lys Lys Thr Asp			
495	500	505	
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Ser Leu Thr Ser Gly Ala Thr Glu Lys Ser Arg Glu Arg Ser Arg Asp			
510	515	520	
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Val Lys Asn Ser Glu Gly Asp Cys Ala			
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Ser Asp Ile Met Asp Leu Phe Cys Ile Ala Thr Gly Leu Pro Arg Asn			
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Thr Thr Ile Ser Leu Leu Thr Thr Asp Asp Ala Met Val Ser Ile Asp			
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Pro Thr Met Pro Ala Asn Ser Glu Arg Thr Pro Tyr Lys Val Arg Pro			
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Val Ala Ile Lys Gln Leu Ser Glu Arg Glu Glu Leu Ile Gln Ser Val			
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Leu Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu			
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Leu Lys Ala Glu Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val			
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Glu Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys Cys Lys Ser Asp			
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Ile Lys Lys Met Arg Glu Glu Leu Ala Ala Arg Ser Ser Arg Thr Asn			
145	150	155	160
Cys Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro			
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Ile	Glu	Ala	Leu	Arg	Lys	Pro	Thr	Phe	Asp	Val	Trp	Leu	Trp	Glu	Pro
	195					200						205			
Asn	Glu	Met	Leu	Ser	Cys	Leu	Glu	His	Met	Tyr	His	Asp	Leu	Gly	Leu
	210					215					220				
Val	Arg	Asp	Phe	Ser	Ile	Asn	Pro	Val	Thr	Leu	Arg	Arg	Trp	Leu	Phe
	225				230				235					240	
Cys	Val	His	Asp	Asn	Tyr	Arg	Asn	Asn	Pro	Phe	His	Asn	Phe	Arg	His
	245					250					255				
Cys	Phe	Cys	Val	Ala	Gln	Met	Met	Tyr	Ser	Met	Val	Trp	Leu	Cys	Ser
	260					265					270				
Leu	Gln	Glu	Lys	Phe	Ser	Gln	Thr	Asp	Ile	Leu	Ile	Leu	Met	Thr	Ala
	275					280					285				
Ala	Ile	Cys	His	Asp	Leu	Asp	His	Pro	Gly	Tyr	Asn	Asn	Thr	Tyr	Gln
	290					295					300				
Ile	Asn	Ala	Arg	Thr	Glu	Leu	Ala	Val	Arg	Tyr	Asn	Asp	Ile	Ser	Pro
	305				310				315					320	
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Ser	Asn	Glu	Glu	His	Met	Thr	Leu	Leu	Lys	Met	Ile	Leu	Ile	Lys	Cys
	385					390				395			400		
Cys	Asp	Ile	Ser	Asn	Glu	Val	Arg	Pro	Met	Glu	Val	Ala	Glu	Pro	Trp
					405				410				415		
Val	Asp	Cys	Leu	Leu	Glu	Glu	Tyr	Phe	Met	Gln	Ser	Asp	Arg	Glu	Lys
			420				425					430			
Ser	Glu	Gly	Leu	Pro	Val	Ala	Pro	Phe	Met	Asp	Arg	Asp	Lys	Val	Thr
			435				440				445				
Lys	Ala	Thr	Ala	Gln	Ile	Gly	Phe	Ile	Lys	Phe	Val	Leu	Ile	Pro	Met
	450					455					460				
Phe	Glu	Thr	Val	Thr	Lys	Leu	Phe	Pro	Met	Val	Glu	Glu	Ile	Met	Leu
	465				470				475				480		
Gln	Pro	Leu	Trp	Glu	Ser	Arg	Asp	Arg	Tyr	Glu	Glu	Leu	Lys	Arg	Ile
				485				490					495		
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tgc aac tcc agc gac atc atg gac ctg ttc tgc atc gcc acc ggc ctg 97  
Cys Asn Ser Ser Asp Ile Met Asp Leu Phe Cys Ile Ala Thr Gly Leu  
20 25 30

cct cgg aac acg acc atc tcc ctg ctg acc acc gac gac gcc atg gtc 145  
Pro Arg Asn Thr Thr Ile Ser Leu Leu Thr Thr Asp Asp Ala Met Val  
35 40 45

tcc atc gac ccc acc atg ccc gcg aat tca gaa cgc act ccg tac aaa 193  
Ser Ile Asp Pro Thr Met Pro Ala Asn Ser Glu Arg Thr Pro Tyr Lys  
50 55 60

gtg aga cct gtg gcc atc aag caa ctc tcc gct gat gtc gag gac aag 241  
Val Arg Pro Val Ala Ile Lys Gln Leu Ser Ala Asp Val Glu Asp Lys  
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aga acc aca agc cgt ggc cag tct gct gag aga cca ctg agg gac aga 289  
Arg Thr Thr Ser Arg Gly Gln Ser Ala Glu Arg Pro Leu Arg Asp Arg  
85 90 95

cggtt gtg ggc ctg gag cag ccc cgg agg gaa gga gca ttt gaa agt 337  
Arg Val Val Gly Leu Glu Gln Pro Arg Arg Glu Gly Ala Phe Glu Ser  
100 105 110

gga cag gta gag ccc agg ccc aga gag ccc cag ggc tgc tac cag gaa 385  
Gly Gln Val Glu Pro Arg Pro Glu Pro Gln Gly Cys Tyr Gln Glu  
115 120 125

ggc cag cgc atc cct cca gag aga gaa gaa tta atc cag agc gtg ctg 433  
Gly Gln Arg Ile Pro Pro Glu Arg Glu Glu Leu Ile Gln Ser Val Leu  
130 135 140

gcg cag gtt gca gag cag ttc tca aga gca ttc aaa atc aat gaa ctg 481  
Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu Leu  
145 150 155 160

aaa gct gaa gtt gca aat cac ttg gct gtc cta gag aaa cgc gtg gaa 529  
Lys Ala Glu Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val Glu  
165 170 175

ttg gaa gga cta aaa gtg gtg gag att gag aaa tgc aag agt gac att 577  
Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys Cys Lys Ser Asp Ile

180	185	190	
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ccc tgt aag tac agt ttt ttg gat aac cac aag aag ttg act cct cga Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro Arg 210	215	220	673
cgc gat gtt ccc act tac ccc aag tac ctg ctc tct cca gag acc atc Arg Asp Val Pro Thr Tyr Pro Lys Tyr Leu Leu Ser Pro Glu Thr Ile 225	230	235	721
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gag atg ctg agc tgc ctg gag cac atg tac cac gac ctc ggg ctg gtc Glu Met Leu Ser Cys Leu Glu His Met Tyr His Asp Leu Gly Leu Val 260	265	270	817
agg gac ttc agc atc aac cct gtc acc ctc agg agg tgg ctg ttc tgc Arg Asp Phe Ser Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe Cys 275	280	285	865
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gag aac cac cac tgc gcc gtg gcc ttc cag atc ctc gcc gag cct gag Glu Asn His His Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro Glu 370	375	380	1153
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gaa att atg gat tct ttc aaa gag aaa atg gag aat ttt gac tac agc Glu Ile Met Asp Ser Phe Lys Glu Lys Met Glu Asn Phe Asp Tyr Ser 420	425	430	1297
aac gag gag cac atg acc ctg ctg aag atg att ttg ata aaa tgc tgt			1345

Asn Glu Glu His Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys Cys			
435	440	445	
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Asp Ile Ser Asn Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp Val			
450	455	460	
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Asp Cys Leu Leu Glu Glu Tyr Phe Met Gln Ser Asp Arg Glu Lys Ser			
465	470	475	480
gaa ggc ctt cct gtg gca ccg ttc atg gac cga gac aaa gtg acc aag			1489
Glu Gly Leu Pro Val Ala Pro Phe Met Asp Arg Asp Lys Val Thr Lys			
485	490	495	
gcc aca gcc cag att ggg ttc atc aag ttt gtc ctg atc cca atg ttt			1537
Ala Thr Ala Gln Ile Gly Phe Ile Lys Phe Val Leu Ile Pro Met Phe			
500	505	510	
gaa aca gtg acc aag ctc ttc ccc atg gtt gag gag atc atg ctg cag			1585
Glu Thr Val Thr Lys Leu Phe Pro Met Val Glu Glu Ile Met Leu Gln			
515	520	525	
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Pro Leu Trp Glu Ser Arg Asp Arg Tyr Glu Glu Leu Lys Arg Ile Asp			
530	535	540	
gac gcc atg aaa gag tta cag aag aag act gac agc ttg acg tct ggg			1681
Asp Ala Met Lys Glu Leu Gln Lys Lys Thr Asp Ser Leu Thr Ser Gly			
545	550	555	560
gcc acc gag aag tcc aga gag aga agc aga gat gtg aaa aac agt gaa			1729
Ala Thr Glu Lys Ser Arg Glu Arg Ser Arg Asp Val Lys Asn Ser Glu			
565	570	575	
gga gac tgt gcc tgaggaaagc gggggcggtg gctgcagtgc tggacgggct			1781
Gly Asp Cys Ala			
580			
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gaccatgttt tctaagaacc attttgttca ctgataaaaaaaa aaaaaaaaaa ggaattcatg			1901
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<213> Homo sapiens			
<400> 21			
Tyr Leu Asp Ile Asp Gly Arg Ile Gln Lys Val Ile Phe Ser Lys Tyr			
1	5	10	15
Cys Asn Ser Ser Asp Ile Met Asp Leu Phe Cys Ile Ala Thr Gly Leu			
20	25	30	
Pro Arg Asn Thr Thr Ile Ser Leu Leu Thr Thr Asp Asp Ala Met Val			
35	40	45	

Ser Ile Asp Pro Thr Met Pro Ala Asn Ser Glu Arg Thr Pro Tyr Lys  
 50 55 60

Val Arg Pro Val Ala Ile Lys Gln Leu Ser Ala Asp Val Glu Asp Lys  
 65 70 75 80

Arg Thr Thr Ser Arg Gly Gln Ser Ala Glu Arg Pro Leu Arg Asp Arg  
 85 90 95

Arg Val Val Gly Leu Glu Gln Pro Arg Arg Glu Gly Ala Phe Glu Ser  
 100 105 110

Gly Gln Val Glu Pro Arg Pro Arg Glu Pro Gln Gly Cys Tyr Gln Glu  
 115 120 125

Gly Gln Arg Ile Pro Pro Glu Arg Glu Glu Leu Ile Gln Ser Val Leu  
 130 135 140

Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu Leu  
 145 150 155 160

Lys Ala Glu Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val Glu  
 165 170 175

Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys Cys Lys Ser Asp Ile  
 180 185 190

Lys Lys Met Arg Glu Glu Leu Ala Ala Arg Ser Ser Arg Thr Asn Cys  
 195 200 205

Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro Arg  
 210 215 220

Arg Asp Val Pro Thr Tyr Pro Lys Tyr Leu Leu Ser Pro Glu Thr Ile  
 225 230 235 240

Glu Ala Leu Arg Lys Pro Thr Phe Asp Val Trp Leu Trp Glu Pro Asn  
 245 250 255

Glu Met Leu Ser Cys Leu Glu His Met Tyr His Asp Leu Gly Leu Val  
 260 265 270

Arg Asp Phe Ser Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe Cys  
 275 280 285

Val His Asp Asn Tyr Arg Asn Asn Pro Phe His Asn Phe Arg His Cys  
 290 295 300

Phe Cys Val Ala Gln Met Met Tyr Ser Met Val Trp Leu Cys Ser Leu  
 305 310 315 320

Gln Glu Lys Phe Ser Gln Thr Asp Ile Leu Ile Leu Met Thr Ala Ala  
 325 330 335

Ile Cys His Asp Leu Asp His Pro Gly Tyr Asn Asn Thr Tyr Gln Ile  
 340 345 350

Asn Ala Arg Thr Glu Leu Ala Val Arg Tyr Asn Asp Ile Ser Pro Leu  
 355 360 365

Glu Asn His His Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro Glu  
 370 375 380

Cys Asn Ile Phe Ser Asn Ile Pro Pro Asp Gly Phe Lys Gln Ile Arg  
 385 390 395 400

Gln Gly Met Ile Thr Leu Ile Leu Ala Thr Asp Met Ala Arg His Ala  
 405 410 415

Glu Ile Met Asp Ser Phe Lys Glu Lys Met Glu Asn Phe Asp Tyr Ser  
 420 425 430

Asn Glu Glu His Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys Cys  
 435 440 445

Asp Ile Ser Asn Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp Val  
 450 455 460

Asp Cys Leu Leu Glu Glu Tyr Phe Met Gln Ser Asp Arg Glu Lys Ser  
 465 470 475 480

Glu Gly Leu Pro Val Ala Pro Phe Met Asp Arg Asp Lys Val Thr Lys  
 485 490 495

Ala Thr Ala Gln Ile Gly Phe Ile Lys Phe Val Leu Ile Pro Met Phe  
 500 505 510

Glu Thr Val Thr Lys Leu Phe Pro Met Val Glu Glu Ile Met Leu Gln  
 515 520 525

Pro Leu Trp Glu Ser Arg Asp Arg Tyr Glu Glu Leu Lys Arg Ile Asp  
 530 535 540

Asp Ala Met Lys Glu Leu Gln Lys Lys Thr Asp Ser Leu Thr Ser Gly  
 545 550 555 560

Ala Thr Glu Lys Ser Arg Glu Arg Ser Arg Asp Val Lys Asn Ser Glu  
 565 570 575

Gly Asp Cys Ala  
 580

<210> 22  
 <211> 1457  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (164)..(1453)

<400> 22  
 ggctccggg cgtccccggc ccgggtggcg cgccggctgtg gttggctgag cgccgcgggc 60  
 cgccccccgc ccgcggccctc ccctgctccc ctccccggcc tcccgccggcg gctggcgatcg 120  
 ggaaagtaca gtaaaaagtc cgagtgcagc cgccgggcgc agg atg gga tcc ggc 175  
 Met Gly Ser Gly  
 1

tcc tcc agc tac cgg ccc aag gcc atc tac ctg gac atc gat gga cgc 223  
 Ser Ser Ser Tyr Arg Pro Lys Ala Ile Tyr Leu Asp Ile Asp Gly Arg  
 5 10 15 20

att cag aag gta atc ttc agc aag tac tgc aac tcc agc gac atc atg 271

Ile Gln Lys Val Ile Phe Ser Lys Tyr Cys Asn Ser Ser Asp Ile Met			
25	30	35	
gac ctg ttc tgc atc gcc acc ggc ctg cct cg aac acg acc atc tcc		319	
Asp Leu Phe Cys Ile Ala Thr Gly Leu Pro Arg Asn Thr Thr Ile Ser			
40	45	50	
ctg ctg acc acc gac gac gcc atg gtc tcc atc gac ccc acc atg ccc		367	
Leu Leu Thr Thr Asp Asp Ala Met Val Ser Ile Asp Pro Thr Met Pro			
55	60	65	
gcg aat tca gaa cgc act ccg tac aaa gtg aga cct gtg gcc atc aag		415	
Ala Asn Ser Glu Arg Thr Pro Tyr Lys Val Arg Pro Val Ala Ile Lys			
70	75	80	
caa ctc tcc gag aga gaa tta atc cag agc gtg ctg gcg cag gtt		463	
Gln Leu Ser Glu Arg Glu Glu Leu Ile Gln Ser Val Leu Ala Gln Val			
85	90	95	100
gca gag cag ttc tca aga gca ttc aaa atc aat gaa ctg aaa gct gaa		511	
Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu Leu Lys Ala Glu			
105	110	115	
gtt gca aat cac ttg gct gtc cta gag aaa cgc gtg gaa ttg gaa gga		559	
Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val Glu Leu Glu Gly			
120	125	130	
cta aaa gtg gtg gag att gag aaa tgc aag agt gac att aag aag atg		607	
Leu Lys Val Val Glu Ile Glu Lys Cys Ser Asp Ile Lys Lys Met			
135	140	145	
agg gag gag ctg gcg gcc aga agc agc agg acc aac tgc ccc tgt aag		655	
Arg Glu Glu Leu Ala Ala Arg Ser Ser Arg Thr Asn Cys Pro Cys Lys			
150	155	160	
tac agt ttt ttg gat aac cac aag aag ttg act cct cga cgc gat gtt		703	
Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro Arg Arg Asp Val			
165	170	175	180
ccc act tac ccc aag tac ctg ctc tct cca gag acc atc gag gcc ctg		751	
Pro Thr Tyr Pro Lys Tyr Leu Leu Ser Pro Glu Thr Ile Glu Ala Leu			
185	190	195	
cgg aag ccg acc ttt gac gtc tgg ctt tgg gag ccc aat gag atg ctg		799	
Arg Lys Pro Thr Phe Asp Val Trp Leu Trp Glu Pro Asn Glu Met Leu			
200	205	210	
agc tgc ctg gag cac atg tac cac gac ctc ggg ctg gtc agg gac ttc		847	
Ser Cys Leu Glu His Met Tyr His Asp Leu Gly Leu Val Arg Asp Phe			
215	220	225	
agc atc aac cct gtc acc ctc agg agg tgg ctg ttc tgc gtc cac gac		895	
Ser Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe Cys Val His Asp			
230	235	240	
aac tac aga aac aac ccc ttc cac aac ttc cgg cac tgc ttc tgc gtg		943	
Asn Tyr Arg Asn Asn Pro Phe His Asn Phe Arg His Cys Phe Cys Val			
245	250	255	260
gcc cag atg atg tac agc atg gtc tgg ctc tgc agt ctc cag gag aag		991	
Ala Gln Met Met Tyr Ser Met Val Trp Leu Cys Ser Leu Gln Glu Lys			
265	270	275	

ttc tca caa acg gat atc ctg atc cta atg aca gcg gcc atc tgc cac	1039
Phe Ser Gln Thr Asp Ile Leu Ile Leu Met Thr Ala Ala Ile Cys His	
280	285
290	
gat ctg gac cat ccc ggc tac aac aac acg tac cag atc aat gcc cgc	1087
Asp Leu Asp His Pro Gly Tyr Asn Asn Thr Tyr Gln Ile Asn Ala Arg	
295	300
305	
aca gag ctg gcg gtc cgc tac aat gac atc tca ccg ctg gag aac cac	1135
Thr Glu Leu Ala Val Arg Tyr Asn Asp Ile Ser Pro Leu Glu Asn His	
310	315
320	
cac tgc gcc gtg gcc ttc cag atc ctc gcc gag cct gag tgc aac atc	1183
His Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro Glu Cys Asn Ile	
325	330
335	340
ttc tcc aac atc cca cct gat ggg ttc aag cag atc cga cag gga atg	1231
Phe Ser Asn Ile Pro Pro Asp Gly Phe Lys Gln Ile Arg Gln Gly Met	
345	350
355	
atc aca tta atc ttg gcc act gac atg gca aga cat gca gaa att atg	1279
Ile Thr Leu Ile Leu Ala Thr Asp Met Ala Arg His Ala Glu Ile Met	
360	365
370	
gat tct ttc aaa gag aaa atg gag aat ttt gac tac agc aac gag gag	1327
Asp Ser Phe Lys Glu Lys Met Glu Asn Phe Asp Tyr Ser Asn Glu Glu	
375	380
385	
cac atg acc ctg ctg aag atg att ttg ata aaa tgc tgt gat atc tct	137.5
His Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys Cys Asp Ile Ser	
390	395
400	
aac gag gtc cgt cca atg gaa gtc gca gag cct tgg gtg gac tgt tta	1423
Asn Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp Val Asp Cys Leu	
405	410
415	420
tta gag gaa tat ttt atg cag agc gac cgt gaga	1457
Leu Glu Glu Tyr Phe Met Gln Ser Asp Arg	
425	430

<210> 23

<211> 430

<212> PRT

<213> Homo sapiens

<400> 23

Met Gly Ser Gly Ser Ser Ser Tyr Arg Pro Lys Ala Ile Tyr Leu Asp	
1	5
10	15

Ile Asp Gly Arg Ile Gln Lys Val Ile Phe Ser Lys Tyr Cys Asn Ser	
20	25
30	

Ser Asp Ile Met Asp Leu Phe Cys Ile Ala Thr Gly Leu Pro Arg Asn	
35	40
45	

Thr Thr Ile Ser Leu Leu Thr Thr Asp Asp Ala Met Val Ser Ile Asp	
50	55
60	

Pro Thr Met Pro Ala Asn Ser Glu Arg Thr Pro Tyr Lys Val Arg Pro	
65	70
75	80

Val Ala Ile Lys Gln Leu Ser Glu Arg Glu Glu Leu Ile Gln Ser Val

85

90

95

Leu Ala Gln Val Ala Glu Gln Phe Ser Arg Ala Phe Lys Ile Asn Glu  
 100 105 110

Leu Lys Ala Glu Val Ala Asn His Leu Ala Val Leu Glu Lys Arg Val  
 115 120 125

Glu Leu Glu Gly Leu Lys Val Val Glu Ile Glu Lys Cys Lys Ser Asp  
 130 135 140

Ile Lys Lys Met Arg Glu Glu Leu Ala Ala Arg Ser Ser Arg Thr Asn  
 145 150 155 160

Cys Pro Cys Lys Tyr Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro  
 165 170 175

Arg Arg Asp Val Pro Thr Tyr Pro Lys Tyr Leu Leu Ser Pro Glu Thr  
 180 185 190

Ile Glu Ala Leu Arg Lys Pro Thr Phe Asp Val Trp Leu Trp Glu Pro  
 195 200 205

Asn Glu Met Leu Ser Cys Leu Glu His Met Tyr His Asp Leu Gly Leu  
 210 215 220

Val Arg Asp Phe Ser Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe  
 225 230 235 240

Cys Val His Asp Asn Tyr Arg Asn Asn Pro Phe His Asn Phe Arg His  
 245 250 255

Cys Phe Cys Val Ala Gln Met Met Tyr Ser Met Val Trp Leu Cys Ser  
 260 265 270

Leu Gln Glu Lys Phe Ser Gln Thr Asp Ile Leu Ile Leu Met Thr Ala  
 275 280 285

Ala Ile Cys His Asp Leu Asp His Pro Gly Tyr Asn Asn Thr Tyr Gln  
 290 295 300

Ile Asn Ala Arg Thr Glu Leu Ala Val Arg Tyr Asn Asp Ile Ser Pro  
 305 310 315 320

Leu Glu Asn His His Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro  
 325 330 335

Glu Cys Asn Ile Phe Ser Asn Ile Pro Pro Asp Gly Phe Lys Gln Ile  
 340 345 350

Arg Gln Gly Met Ile Thr Leu Ile Leu Ala Thr Asp Met Ala Arg His  
 355 360 365

Ala Glu Ile Met Asp Ser Phe Lys Glu Lys Met Glu Asn Phe Asp Tyr  
 370 375 380

Ser Asn Glu Glu His Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys  
 385 390 395 400

Cys Asp Ile Ser Asn Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp  
 405 410 415

Val Asp Cys Leu Leu Glu Glu Tyr Phe Met Gln Ser Asp Arg

420

425

430

<210> 24  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: FLAG epitope

<400> 24  
Asp Thr Lys Asp Asp Asp Asp Lys  
1 5

<210> 25  
<211> 54  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 25  
tagaccatgg actacaagga cgacgatgac aagatggacg cattcagaag cact 54

<210> 26  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 26  
cgaggagtca acttcttg 18